LONG (RESERVOIR)

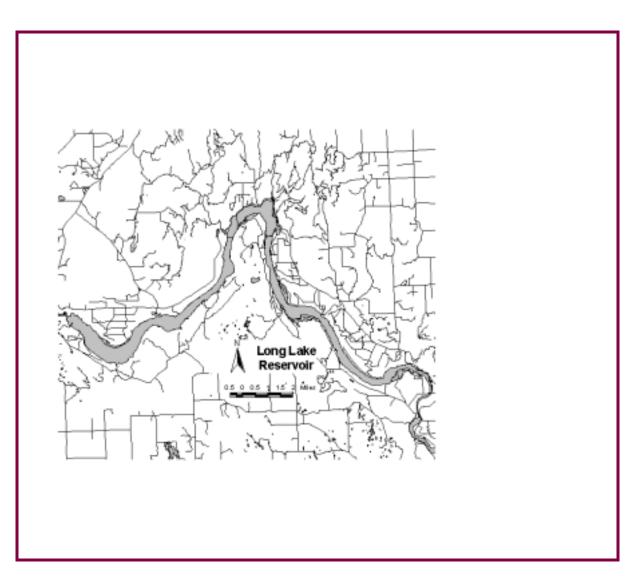
SPOKANE County

Lake ID: LONSP1
Ecoregion: 7

Long Lake is located three miles northwest of the City of Spokane. It is a reservoir of the Spokane River spanning more than twenty miles.

Area (acres)	Maximum Depth (ft)				
5020	180				
Volume (as ft)	C1 1: (!1)				
Volume (ac-ft)	Shoreline (miles)				

Mean Depth (ft)	Drainage (sq mi)				
49.5					
Altitude (ft abv msl)	Latitude	Longitude			
1536	47 46 30.	117 32 30.			



Primary Station	Station # 1	latitude: 47 49 54.0	longitude: 117 45 46.0			
	Description:	Directly across from the DNR the dam.	Park/campground about four miles from			
Secondary Station	Station # 3	latitude: 47 51 37.0	longitude: 117 39 57.0			
	Description:	About 1 1/2 miles upchannel from Willow Bay Resort, center channel across from an A-frame house.				
Secondary Station	Station # 5	latitude: 47 47 46.0	longitude: 117 34 19.0			
	Description:	About 3 miles below Nine Mile Falls, across the channel from Nine Mile Resort.				

Trophic State Assessment for 1999 LONG (RESERVOIR)

Analyst: Sarah O'Neal

TSI_Secchi: a 36
TSI_Phos: 46
TSI_Chl: 51
Narrative TSI: b M

Long Lake is a twenty-mile long reservoir of the Spokane River. Trophic state indices varied widely for the lake, each indicating a different trophic state. Water clarity was good, generating an oligotrophic Secchi index. Phosphorus levels were moderate. When the lake was stratified during the second half of the summer, hypolimnetic phosphorus levels were slightly elevated, indicating there may have been some internal nutrient loading. Fortunately, however, hypolimnetic dissolved oxygen levels remained stable during stratification, possibly due to hypolimnion flow through of the Spokane River. Chlorophyll levels were particularly high in Long Lake, consistent with an eutrophic state. However, algae was not reported as a particular problem, and plants were also not excessive. Two non-native, aggressive species were present in the lake: Eurasian watermilfoil (Myriophyllum spicatum) was introduced but not abundant; and a floating leaf plant, yellow floating heart (Nymphoides peltata), which is rare to Washington State, had established and proliferated in the lake. It grew densely wherever habitat was suitable.

While sampling, uses noted included swimming, skiing, and fishing. However, no questionnaires were distributed. WDFW reported a productive warmwater fishery in Long Lake which primarily consisted of large- and smallmouth bass. Other warmwater fish species in the lake included pumpkinseed, yellow perch, and black crappie. A few northern pike also entered the lake from Lake Coeur d' Alene. Long Lake was stocked with 5 - 10,000 brown trout annually. Some rainbow trout also migrated to the lake from the Spokane and Little Spokane Rivers, where they were planted.

The objective for monitoring Long Lake was to support work being conducted by others in 1999. Establishing a nutrient criterion was not an objective. In fact, Long

Lake is the only lake in Washington that has a phosphorus criterion in the Water Quality Standards. Lake Class water quality standards for Long Lake (Chapter 173-201-130 (107a) WAC) state that the average concentrations for total phosphorus in the euphotic zone shall not exceed 25 ug/L from June 1 to October 31. Phosphorus concentrations in 1999 were below this criterion.

Mean Secchi = 5.2m; Mean TP = 18.8 ug/L; Mean Chl = 7.8 ug/L

Chemistry Data LONG (RESERVOIR) Chloro-Fecal Col. Date Time Strata Tot P Tot N Bacteria phyll Hardness Calcium **Turbidity** (ug/L) TN:TP (ug/L) (#/100mL) (mg/L) (ug/L) (NTU) Station 1 6/14/1999 Ε 21.5 .273 13 5.8 32.9 8360 2.3 7/12/1999 1415 Ε 21 .372 18 2.68 1.1 20.1 .514 26 Η 42 1.9 8/9/1999 Ε 12.4 .519 .6 Н 23.2 1.16 50 Е 19.1 46 9/13/1999 .873 14.6 .8 43.2 30 Η 1.3 Station 3 6/14/1999 E 21.6 .298 14 3.9 33.7 8530 2.9 7/12/1999 1215 Е 36 2.3 20 .726 5.71 8/9/1999 E .577 41 1.5 14 6.7 Η 30.8 1.27 41 9/13/1999 Е 24.9 .77 31 4.5 1.5 40 Η 27.2 1.09

Strata: L=lake surface, E=epilimnion, H=hypolimnion; Qualifier: J=Estimate, U=Less than, G=Greater than.

Aquatic Plant Data

LONG (RESERVOIR)

Survey Date: 8/31/1999

Sampler: Parsons, O'Neal Max depth of growth (M):6

Comments Cold, breeze. Alkalinity reading slightly off. Dense plant growth on sandbar across from

^a TSI Qualifiers: B or W-Secchi Disk hit bottow or entered weeds; J-Estimate; N-Fewer than the required number of samples

^b E=eutrophic, ME=mesoeutrophic, M=mesotrophic, OM=oligomesotrophic, O=oligotrophic

Nine Mile Resort, about 2 meters deep. Water clarity and depth of plant growth greater at lower (west) end. Eurasian milfoil found at lower end, none at upper end. Didn't inventory the middle part of the reservoir. Many Osprey.

SPECIES LIST			
Scientific Name	Common Name	Dist ^a	Comments
Ceratophyllum demersum	Coontail; hornwort	2	
Elodea canadensis	common elodea	3	
Iris pseudacorus	yellow flag	2	
Lythrum salicaria	purple loosestrife	2	at upper end
Myriophyllum spicatum	Eurasian water-milfoil	2	at lower end
Najas flexilis	common naiad	3	
Nitella sp.	stonewort	1	at lower end
Nymphoides peltata	water fringe	4	dominates in suitable habitat
Potamogeton crispus	curly leaf pondweed	2	
Potamogeton pectinatus	sago pondweed	2	
Potamogeton richardsonii	Richardson's pondweed	2	
Potamogeton sp (thin leaved)	thin leaved pondweed	3	
Potamogeton zosteriformis	eel-grass pondweed	1	
unknown plant	unknown	1	looked terrestrial
Vallisneria americana	water celery	2	at lower end

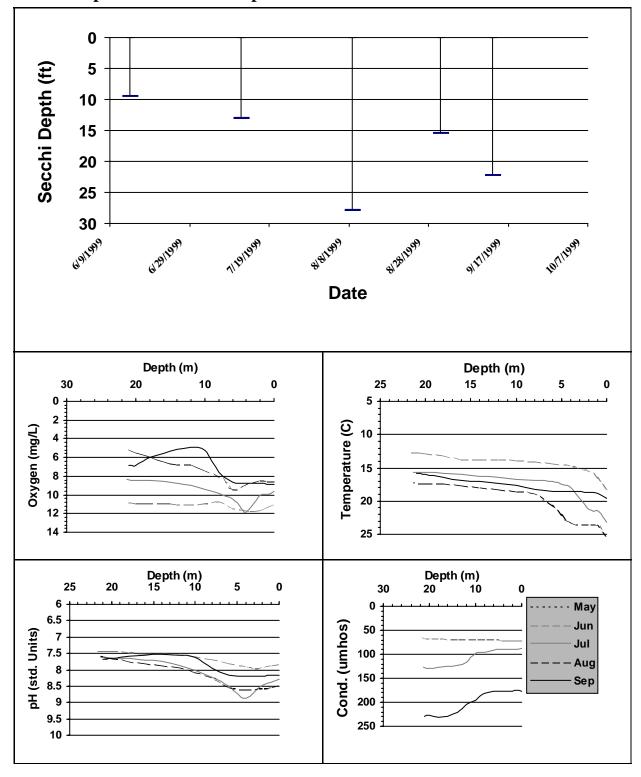
a 0 - value not recorded (plant may not be submersed)

^{2 -} few plants, but with a wide patchy distribution 4 - plants in nearly monospecific patches, dominant

^{1 -} few plants in only 1 or a few locations

^{3 -} plants in large patches, codominant with other plants

^{5 -} thick growth covering substrate to exclusion of other species



Date	Time	Temp- erature (F)	Secchi (ft)	Color (1-greens, 11-browns	Bright- ness (pct)		Rainfall (0-none, 5-heavy)	Aesthetics (1-bad, 5- good)	Swimming (1-poor, 5- good)	Geese (#)	Waterfowl (besides geese #)	Boats- Fishing (#)	Boats- Skiing (#)
Station 1													
6/14/1999			9.5	2	20	2	1	4	4	0	5	0	4
	Sample	er: HALLO	CK	Remark					from DNR campg pration failing QA		ess. Lake not strat rements.	ified. Dissolve	ed oxygen
7/12/1999			13.1	6	0	1	1	4	4	0		1	2
	Sample	er: HALLO	CK	Remark					k. Quite a bit of on A/QC requirement		ırface. Dissolved	oxygen measu	irement
8/9/1999			27.9	1.5	10	1	1	5	5				
	Sample	er: HALLO	CK	Remark	s: Bottom:	21.3M. Diss	olved oxygen	measurement qu	alified as an estir	nate due to	calibration failin	g QA/QC requ	irements.
8/31/1999			15.42										
	Sample	er: Parsons		Remark	s:								
9/13/1999			22.3	2	10	1	1	4	4	0	0	0	0
9/13/1999	Sample	er: HALLO				_	-	nidges on surfac	•	O	U	U	U
Station 3	~							8					
6/14/1999			8.2	2	20	2	1	4	4	0	0	0	2
0/14/1999	Sample	er: HALLO			s: Bottom: (adjacen	15.4M. Accent from an A-f	ess is via laun	ch at Willow Bay nk). Lake not st		ream about	1 mile to just be neasurement qual		ns out
7/12/1999			12.1	6	0	1	1	4	4	5	1	0	0
	Sample	er: HALLO	CK	Remark					n transit. "Other" calibration failin		was an osprey. N requirements.	ot stratified. I	Dissolved
8/9/1999			18	6	10	2	1	5	5	0	8	1	1
	Sample	er: HALLO	CK	Remark	s: Bottom:	16.8M. Diss	olved oxygen	measurement qu	alified as an estir	nate due to	calibration failin	g QA/QC requ	irements.
9/13/1999			13.8	2	0	2	1	4	4	25	50	3	0
	Sample	er: HALLO	CK	Remark	s: Bottom:	16.8. Collec	ted discrete TI	OP and chl sar	nples at 3M inter	vals for Jin	n Carroll at this st	ation.	
Station 5													
8/9/1999			10.5	2	10	2	1						
	Sample	er: HALLO	CK	Remark	main ch		ant weeds in t		•		ile Resort near far alified as an estin		